



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Re Application of: W. Kenneth Wilkinson )  
Application No.: 09/843,749 )  
Filing Date: April 30, 2001 )  
Title: Melt Spun Thermoplastic Polyurethanes )  
Useful as Textile Fibers )

Examiner: R. Sergeant

Art Unit: 1711

**RECEIVED**  
**JUN 22 2004**  
**TC 1700**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

**DECLARATION UNDER 37 C.F.R. § 1.132**

Dear Sir:

I, Dr. Charles Goodrich, declare that:

1. I am a retired Ph.D. chemist who has worked in the field of polymer chemistry for 37 years. I obtained my Ph.D. in chemistry from the University of Iowa in 1962. I have read and understood the claims in U.S. Patent Application No. 09/843,749, submitted to the U.S. Patent and Trademark Office on April 30, 2001. The claims include processes for preparing the polymer compositions, and processes for preparing the polyurethane fibers. The polymer compositions, which are prepared by a unique multi-step process, have a number average molecular weight that is higher than typical spandex fibers to compensate for lack of urea functionality in the backbone of the polyurethane polymer. Spandex fibers are prepared from poly(urea)urethane polymers that have as their highest values for molecular weights WEIGHT AVERAGE MOLECULAR VALUES that are typically from 145,000 to 365,000. In contrast, the NUMBER AVERAGE MOLECULAR VALUES are much lower, based on practical viscosity measurements. Some typical spandex fibers and their various average molecular weights are:

	Mn	Mw	Mw/Mn
Acelan	65,000	168,000	2.6
Espa T-565	84,000	262,000	3.0
Fujibo K	83,000	234,000	2.8
Gilospan	57,000	188,000	3.3
Lycra T-126	93,000	256,000	2.7
Lycra T-127	110,000	365,000	3.3

The WEIGHT AVERAGE measurements are determined by osmotic pressure techniques and are NEVER USED for process control. One skilled in the art would know that all commercial manufacturers of spandex depend upon viscosity measurements (NUMBER AVERAGE MOLECULAR WEIGHT) for process control. The minimum value of 200,000 molecular weight, i.e., number average molecular weight, in the claims is equal to an intrinsic viscosity of 1.4. One of ordinary skill in the art would further know that a lower limit of 1.4 for intrinsic viscosity is necessary to improve the tenacity of the polyurethane fiber, which accompanies the higher molecular weight necessary to counter the "weaker" hard segment of the melt-spun polyurethane fibers. Viscosity measurements are normally made in the solvent dimethyl acetamide. Intrinsic viscosity of a typical spandex fiber is in the range of 0.9-1.0.

2. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and such willful false statements may jeopardize the validity of the application or any patent issued therefrom.

6/2/2004  
(Date)

Charles Goodrich, Ph.D.  
(Signed) Charles Goodrich, Ph.D.